What is claimed is:

1. A variable focus system, comprising:
   (a) an optic that includes a plurality of movable optical elements; and
   (b) a controller coupled to said optic, said controller generating at least a first signal and a second signal, said first signal causing at least some of said plurality of optical elements to move so as to provide said optic with a first focal configuration and said second signal causing at least some of said plurality of optical elements to move so as to provide said optic with a second focal configuration different from said first focal configuration.

2. A variable focus system according to claim 1, wherein each one of said plurality of movable elements is essentially only a reflector.

3. A variable focus system according to claim 1, wherein each one of said plurality of movable elements is essentially only a refractor.

4. A variable focus system according to claim 1, wherein each one of said plurality of movable elements is a beamsplitter.

5. A variable focus system according to claim 1, wherein each one of said plurality of optical elements is a microelement.

6. A variable focus system according to claim 1, wherein at least one of said plurality of movable elements comprises at least two optical components each having an optical property different from the other, each said optical property being selected from the group consisting of reflection, refraction, beamsplitting, opacity and transparency.

7. A variable focus system according to claim 1, wherein said optic is a MEMS optic.

8. A variable focus system according to claim 1, wherein each one of said plurality of movable optical elements moves by tilting.

9. A variable focus system according to claim 1, wherein each one of said plurality of movable optical elements moves by flexing.

10. An electrovariable optic comprising an optic in a variable focus system according to claim 1, wherein said first signal and said second signal are electrical signals.

11. A system for projecting a plurality of 2D images onto a plurality of corresponding respective image planes, comprising:
    (a) at least one image source providing a plurality of 2D images;
    (b) an electrovariable optic reconfigurable to focus each one of said plurality of 2D images onto a plurality of corresponding respective image planes; and
    (c) a controller coupled with said at least one image source and said electrovariable optic, said controller controlling said at least one image source and said electrovariable optic so as to focus each one of said plurality of 2D images onto said plurality of corresponding respective image planes.

12. A system according to claim 11, wherein each one of said plurality of 2D images is an image slice of a 3D image and said controller controls said electrovariable optic so as to focus said plurality of 2D images onto said plurality of corresponding respective image planes, thereby generating said 3D image thereon.

13. A system according to claim 11, wherein said controller controls said electrovariable optic so as to focus said plurality of 2D images onto said plurality of corresponding respective image planes such that said plurality of 2D images appear to be moving among said plurality of corresponding respective image planes.

14. A system according to claim 11, wherein said at least one image source is a video display.

15. A system according to claim 11, wherein said at least one image source is a digital image device.

16. A system according to claim 15, wherein said digital image device comprises a digital light processor.

17. A system according to claim 15, wherein said digital image device is a gated light valve.

18. An electrovariable optic having a plurality of focal configurations, comprising:

(a) a substrate; and

(b) a plurality of optical elements arranged in concentric arcs, each of said plurality of optical elements mounted on said substrate and movable with respect to said substrate such that each of said plurality of optical elements is movable to a plurality of orientations corresponding to the plurality of focal configurations.

19. An electrovariable optic according to claim 18, wherein said concentric arcs form concentric rings.

20. An electrovariable optic according to claim 18, wherein said substrate has a planar surface and each of said plurality of optical elements is mounted to said substrate on said planar surface.

21. An electrovariable optic according to claim 18, wherein said substrate has a curved surface and each of said plurality of optical elements is mounted to said substrate on said curved surface.

22. An electrovariable optic according to claim 18, wherein each of said plurality of optical elements is pivotable with respect to said substrate.

23. An electrovariable optic according to claim 18, wherein each of said plurality of optical elements includes a flexible electrode that flexes to achieve said plurality of orientations.

24. An electrovariable optic according to claim 18, wherein each of said plurality of optical elements is a MEMS device.

25. An electrovariable optic according to claim 18, wherein at least some of said plurality of optical elements are reflectors.

26. An electrovariable optic according to claim 25, wherein said reflectors are micromirrors.

27. An electrovariable optic according to claim 18, wherein at least some of said plurality of optical elements are beamsplitters.

28. An electrovariable optic according to claim 18, wherein at least some of said plurality of optical elements are refractors.

29. An electrovariable optic according to claim 18, wherein at least one of said plurality of optical elements comprises at least two optical components each having an optical property different from the other, each said optical property being selected from the group consisting of reflection, refraction, beamsplitting, opacity and transparency.

30. An electrovariable optic according to claim 18, wherein said concentric arcs are circular.

31. An electrovariable optic having a plurality of focal configurations, comprising:
    (a) a substrate having a curved surface; and
    (b) a plurality of optical elements each mounted on said substrate at said curved surface and movable with respect to said substrate such that each of said plurality of optical elements is movable to a plurality of orientations corresponding to the plurality of focal configurations.

32. An electrovariable optic according to claim 31, wherein each of said plurality of optical elements is pivotable with respect to said substrate.

33. An electrovariable optic according to claim 31, wherein each of said plurality of optical elements includes a flexible electrode that flexes to achieve said plurality of orientations.

34. An electrovariable optic according to claim 31, wherein each of said plurality of optical elements is a MEMS device.

35. An electrovariable optic according to claim 31, wherein at least some of said plurality of optical elements are reflectors.

36. An electrovariable optic according to claim 35, wherein said reflectors are micromirrors.

37. An electrovariable optic according to claim 31, wherein at least some of said plurality of optical elements are beamsplitters.

38. An electrovariable optic according to claim 31, wherein at least some of said plurality of optical elements are refractors.

39. An electrovariable optic according to claim 31, wherein at least one of said plurality of optical elements comprises at least two optical components each having an optical property different from the other, each said optical property being selected from the group consisting of reflection, refraction, beamsplitting, opacity and transparency.

40. An electrovariable optic according to claim 31, wherein said plurality of optical elements are arranged in concentric arcs.

41. An electrovariable optic according to claim 40, wherein said concentric arcs form rings.

42. A system, comprising:
    (a) an electrovariable optic having a plurality of focal configurations, comprising:
        (i) a substrate;
        (ii) a plurality of optical elements each movably attached to said substrate; and
        (iii)a plurality of actuators each corresponding to a corresponding one of said plurality of optical elements for moving that one of said plurality of optical elements; and
    (b) a controller operatively coupled to said plurality of actuators so as to move said plurality of optical elements to provide said electrovariable optic with said plurality of focal configurations.

43. A system according to claim 42, wherein said plurality of focal configurations corresponds to a plurality of image planes.

44. A system according to claim 43, wherein said plurality of image planes are located in free space.

45. A system according to claim 42, wherein said controller changes between ones of said plurality of focal configurations at least 30 times a second.

46. A system according to claim 42, wherein said plurality of focal configurations correspond to a plurality of image planes, the system further comprising an image source for

providing a plurality of images to said electrovariable optic for projection onto said plurality of image planes.

47. A system according to claim 42, wherein each of said plurality of images is an image slice of a 3D image that said electrovariable optic projects onto a corresponding one of said plurality of image planes.

48. A system according to claim 42, wherein said controller changes said electrovariable optic among said plurality of focal configurations at a first rate and said image source provides said plurality of images at a second rate, said controller synchronizing said first and second rates with one another.

49. A system according to claim 42, wherein said plurality of images form a 3D video image.

50. A system according to claim 42, wherein said image source is a video monitor.

51. A system according to claim 50, wherein said video monitor is a computer monitor.

52. A system according to claim 42, wherein each of said plurality of optical elements includes a flexible electrode.

53. A system according to claim 42, wherein each of said plurality of optical elements is pivotable relative to said substrate about a pivot axis.

54. A system according to claim 42, wherein each of said plurality of optical elements is pivotable relative to said substrate about two pivot axes mutually orthogonal to one another.

55. A system according to claim 42, wherein each of said plurality of actuators comprises at least one electrode fixed relative to said substrate.

56. A system according to claim 42, wherein each of said plurality of actuators comprises a piezoelectric actuator.

57. A system, comprising:

(a) an electrovariable optic having a plurality of focal configurations and comprising a plurality of flexible electrodes that each include a flexible optical element; and

(b) a controller operatively coupled to said plurality of flexible electrodes so as to flex or extend said plurality of flexible electrodes to move each flexible optical element to provide said electrovariable optic with said plurality of focal configurations.

58. A system according to claim 57, wherein each flexible optical element is a mirror.

59. A system according to claim 57, wherein each flexible optical element is a refractor.

60. A system according to claim 57, wherein each flexible optical element is a beamsplitter.

61. A system according to claim 57, wherein at least one of said plurality of movable elements comprises at least two optical components each having an optical property different from the other, each said optical property being selected from the group consisting of reflection, refraction, beamsplitting, opacity and transparency.

62. An electrovariable optic having a plurality of focal configurations, comprising:

(a) a substrate; and

(b) a plurality of flexible electrode optical elements arranged in concentric arcs, each of said plurality of flexible electrode optical elements mounted on said substrate and movable with respect to said substrate such that each of said plurality of flexible electrode optical elements is movable to a plurality of orientations corresponding to the plurality of focal configurations.

63. A device, comprising:

(a) an electrovariable optic including a plurality of movable optical elements and having a plurality of focal configurations; and

(b) a controller operatively configured to control the movement of each of said plurality of movable optical elements so as to focus said electrovariable optic at each of said plurality of focal configurations.

64. A device according to claim 63, further including a conventional optic.

65. A device according to claim 63, further comprising at least one image source for providing a plurality of images to said electrovariable optic.

66. A device according to claim 65, wherein said image source is a video monitor.

67. A method of forming a first image using an optic that includes an array of movable optical elements and has a plurality of focal configurations, comprising the steps of:
(a) providing a second image comprising a plurality of image slices to the optic; and
(b) moving at least some of the movable optical elements in said array substantially simultaneously with one another so as to focus said second image at an image location corresponding to a respective one of the plurality of focal configurations.

68. A method of controlling an optic that includes an array of movable optical elements, comprising the step of:
(a) moving at least some of the movable optical elements in the array substantially simultaneously with one another so that the array of movable optical elements has a first focal point; and
(b) moving at least some of the movable optical elements in the array substantially simultaneously with one another so that the array of movable optical elements has a second focal point spaced from said first focal point.

69. A method according to claim 68, wherein the time between steps (b) and (a) is no greater than one-tenth of a second.

70. A method according to claim 69, wherein the time between steps (b) and (a) is no greater than one one-hundredth of a second.

71. A method according to claim 68, further comprising a step (c) of moving at least some of the movable optical elements in the array substantially simultaneously with one another so that the array of movable optical elements has a third focal point spaced from each of said first and second focal points.

72. A method according to claim 71, wherein said first, second and third focal points lie along a linear line.

73. A method of controlling an electrovariable optic so as to display a series of images at a plurality of corresponding respective image planes spaced from one another, comprising the steps of:
    (a) generating a first signal that causes the electrovariable optic to focus a first image of the series of images onto a first corresponding respective image plane of the plurality of corresponding respective image planes; and
    (b) generating a second signal that causes the electrovariable optic to focus a second image of the series of images onto a second corresponding respective image plane of the plurality of corresponding respective image planes.

74. A method according to claim 73, wherein each image of the series of images is presented to the electrovariable optic by at least one image source and said first signal causes the at least one image source to present said first image to the electrovariable optic substantially simultaneously with the focusing of said first image onto said first corresponding respective image plane.

75. A method according to claim 74, wherein said second signal causes the at least one image source to present said second image to the electrovariable optic substantially simultaneously with the focusing of said second image onto said second corresponding respective image plane.

76. A computer readable medium on which is stored a program for controlling an electrovariable optic so as to display a series of images at a plurality of corresponding respective image planes spaced from one another, the program comprising instructions that, when executed by a computer, perform the steps of:
    (a) generating a first signal that causes the electrovariable optic to focus a first image of the series of images onto a first corresponding respective image plane of the plurality of corresponding respective image planes; and
    (b) generating a second signal that causes the electrovariable optic to focus a second image of the series of images onto a second corresponding respective image plane of the plurality of corresponding respective image planes.

77. A computer readable medium according to claim 76, wherein each image of the series of images is presented to the electrovariable optic by at least one image source and said first signal causes the at least one image source to present said first image to the electrovariable optic substantially simultaneously with the focusing of said first image onto said first corresponding respective image plane.

78. A computer readable medium according to claim 77, wherein said second signal causes the at least one image source to present said second image to the electrovariable optic substantially simultaneously with the focusing of said second image onto said second corresponding respective image plane.

79. A computer readable signal in which is contained a program for controlling an electrovariable optic so as to display a series of images at a plurality of corresponding respective image planes spaced from one another, the program comprising instructions that, when executed by a computer, perform the steps of:
    (a) generating a first signal that causes the electrovariable optic to focus a first image of the series of images onto a first corresponding respective image plane of the plurality of corresponding respective image planes; and
    (b) generating a second signal that causes the electrovariable optic to focus a second image of the series of images onto a second corresponding respective image plane of the plurality of corresponding respective image planes.

80. A computer readable signal according to claim 79, wherein each image of the series of images is presented to the electrovariable optic by at least one image source and said first signal causes the at least one image source to present said first image to the electrovariable optic substantially simultaneously with the focusing of said first image onto said first corresponding respective image plane.

81. A computer readable signal according to claim 80, wherein said second signal causes the at least one image source to present said second image to the electrovariable optic substantially simultaneously with the focusing of said second image onto said second corresponding respective image plane.